

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

Claims 1 and 2 (Canceled)

Claim 3 (Currently amended): The microelectronic spring structure of Claim 73, wherein ~~an end~~ said tip of said beam has an unloaded height over said electronic component in the range of about 1 to about 5 mils.

Claim 4 (Currently amended) The microelectronic spring structure of Claim 73, wherein ~~an end~~ said tip of said beam has an unloaded height over said electronic component less than about 2 mils.

Claim 5 (Previously presented): The microelectronic spring structure of Claim 73, wherein said beam has a width in the range of about 6 to about 12 mils.

Claim 6 (Previously presented): The microelectronic spring structure of Claim 73, wherein said beam has a width no greater than about 5 mils at said base.

Claim 7 (Previously amended): The microelectronic spring structure of Claim 6, wherein said beam has a width less than about 1 mil.

Claim 8 (Currently amended): The microelectronic spring structure of Claim 73, wherein said length of said beam ~~has a length is~~ in the range of about 1 to about 10 mils.

Claims 9-12 (Canceled)

Claim 13 (Previously presented): The microelectronic spring structure of Claim 73, wherein said microelectronic spring structure has an elastic deflection ratio in a direction perpendicular to and towards said electronic component of at least about 10%.

Claim 14 (Previously presented): The microelectronic spring structure of Claim 73, wherein said microelectronic spring structure has an elastic range in a direction perpendicular to and towards said electronic component within a range of about one to about twenty mils.

Claims 15 and 16 (Canceled)

Claim 17 (Previously presented): The microelectronic spring structure of Claim 73, wherein said microelectronic spring structure has a spring rate at an end thereof in at least one direction within a range of about 30 to about 600 micrograms per micron.

Claim 18 (Canceled)

Claim 19 (Previously presented): The microelectronic spring structure of Claim 71, wherein said beam is contoured in a lengthwise direction.

Claim 20 (Canceled)

Claim 21 (Previously presented): The microelectronic spring structure of Claim 71, wherein said cross-sectional width is generally V-shaped.

Claim 22 (Withdrawn): The microelectronic spring structure of Claim 71, wherein said cross-sectional width is generally U-shaped in cross-section.

Claim 23 (Withdrawn): The microelectronic spring structure of Claim 71, wherein said cross-sectional width is generally S-shaped in a lengthwise direction.

Claim 24 (Withdrawn): The microelectronic spring structure of Claim 71, wherein said beam further comprises corrugations disposed along a lengthwise direction.

Claim 25 (Previously presented): The microelectronic spring structure of Claim 71, wherein said beam, in a lengthwise sectional view, has a stepped portion connected to said base.

Claim 26 (Previously presented): The microelectronic spring structure of Claim 25, wherein said stepped portion of said beam has a step height in the range about 5% to about 20% of an unloaded height of an end of said beam over said electronic component.

Claim 27 (Previously presented): The electronic component of Claim 25, wherein said stepped portion of said beam has a step height about 10% of an unloaded height of an end of said beam over said electronic component.

Claim 28 (Withdrawn): The microelectronic spring structure of Claim 71, wherein said beam further comprises a plurality of lengthwise ribs extending over at least a portion of said beam.

Claim 29 (Withdrawn): The microelectronic spring structure of Claim 71, wherein said beam further comprises a lengthwise rib extending over at least a portion of said beam.

Claim 30 (Withdrawn): The microelectronic spring structure of Claim 29, wherein said beam has a stepped portion connected to said base, and wherein said lengthwise rib extends to said stepped portion.

Claim 31 (Withdrawn): The microelectronic spring structure of Claim 29, wherein said lengthwise rib extends into said base.

Claim 32 (Withdrawn): The microelectronic spring structure of Claim 29, wherein said lengthwise rib comprises a lengthwise channel.

Claim 33 (Withdrawn): The microelectronic spring structure of Claim 29, wherein said lengthwise channel has a regular geometric cross-sectional shape.

Claim 34 (Withdrawn): The microelectronic spring structure of Claim 33, wherein said regular geometric cross-sectional shape further comprises a shape selected from the group consisting of part-rectangular, part-trapezoidal, part-triangular and part-round shapes.

Claim 35 (Withdrawn): The microelectronic spring structure of Claim 29, wherein a cross-sectional dimension of said lengthwise rib differs over the length thereof.

Claim 36 (Withdrawn): The microelectronic spring structure of Claim 29, wherein said rib is comprised of a folded portion of said beam.

Claim 37 (Withdrawn): The microelectronic spring structure of Claim 71, wherein said beam has a plurality of ribs along a lengthwise direction, wherein said plurality of ribs have a height tapering from a first dimension at said base to a second dimension at said tip, wherein said first dimension is greater than said second dimension.

Claim 38 (Previously presented): The microelectronic spring structure of Claim 71, wherein said base and said beam are integrally formed.

Claims 39 and 40 (Canceled)

Claim 41 (Previously presented): The microelectronic spring structure of Claim 71, wherein said beam, viewed in a direction normal to said electronic component, is tapered so as to have a generally triangular shape.

Claim 42 (Withdrawn): The microelectronic spring structure of Claim 71, wherein said beam, viewed in a direction normal to said electronic component, has a generally rectangular shape.

Claim 43 (Withdrawn): The microelectronic spring structure of Claim 71, wherein said beam, viewed in a direction normal to said electronic component, has an offset with respect to a central axis.

Claim 44 (Withdrawn and currently amended): The microelectronic spring structure of Claim 71, wherein said beam, viewed in a direction normal to said electronic component, is contoured so that [[a]] said tip is located at an end of said beam [[that]] and is opposite said base is positioned a distance from said base that is less than an integrated length of said beam between said base and said tip.

Claim 45 (Withdrawn): The microelectronic spring structure of Claim 71, wherein said beam, viewed in a direction normal to said electronic component, is serpentine.

Claim 46 (Withdrawn): The microelectronic spring structure of Claim 71, wherein said beam, viewed in a direction normal to said electronic component, is C-shaped.

Claim 47 (Withdrawn): The microelectronic spring structure of Claim 44, wherein a portion of said beam comprises at least two parallel arms.

Claim 48 (Previously presented): The microelectronic spring structure of Claim 71, wherein said base and said beam are integrally formed and comprise a resilient material.

Claims 49 and 50 (Canceled)

Claim 51 (Currently amended): The microelectronic spring structure of Claim 71, wherein said base and said beam are integrally formed and comprise a layer of an electrically conductive seed material and a layer of ~~electroplated~~ metallic material electroplated onto said seed material, wherein said layer of metallic material is thicker than said layer of seed material.

Claims 52-70 (Canceled)

Claim 71 (Currently amended): A microelectronic spring structure comprising:

a base secured to a terminal of an electronic component, wherein said electronic component comprises a semiconductor die; and

a beam extending from said base and ending in a tip spaced from said electronic component, wherein a shape of a cross-sectional width of said beam perpendicular to a length of said beam from said base to said tip comprises a contour that increases at least one of an area moment of inertia of said beam, a stiffness of said beam, and a spring force of said beam relative to a beam having an equivalent mass per unit length but lacking said contour,

wherein a thickness of said beam is thinner at said tip than at said base.

Claim 72 (Canceled)

Claim 73 (Currently amended): The microelectronic spring structure of ~~Claim 72~~ Claim 71, wherein said semiconductor die is one of a plurality of semiconductor dice composing an unsingulated semiconductor wafer.

Claim 74 (Currently amended): An electronic component comprising:

a terminal; and

a contact structure comprising:

a base secured to said terminal; and

a beam extending from said base and ending in a tip spaced from said electronic component, a cross-sectional width of said beam ~~contoured in~~ perpendicular to a length of said beam from said base to said tip comprising one of a "V" shape, a "U" shape, and a shape comprising an extension that forms a rib, wherein a thickness of said beam is thinner at said tip than at said base, said beam comprises a compound curve along said length from said base to said tip, and said electronic component is a semiconductor die.

Claim 75 (Canceled)

Claim 76 (Previously presented): The electronic component of Claim 75, wherein said semiconductor die is one of a plurality of semiconductor dice composing an unsingulated semiconductor wafer.

Claim 77 (Previously presented): The electronic component of Claim 74, wherein said beam is contoured along a length thereof.

Claim 78 (Previously presented): The electronic component of Claim 74, wherein said beam has a generally triangular shape.

Claim 79 (Previously presented): The electronic component of Claim 74, wherein said base and said beam are integrally formed.

Claim 80 (Previously presented): The electronic component of Claim 79, wherein said base and said beam comprise a resilient material.

Claim 81 (Currently amended): The electronic component of Claim 79, wherein said base and said beam comprise a layer of conductive seed material and a layer of ~~electroplated~~ metallic material electroplated onto said seed material, wherein said layer of metallic maerial is thicker than said layer of seed material.

Claim 82 (Previously presented): The electronic component of Claim 74 further comprising a plurality of said terminals and a plurality of said contact structures.

Claims 83-104 (Canceled)

Claim 105 (Previously presented): The electronic component of claim 74, wherein said cross-sectional width of said beam is contoured in said "V" shape.

Claim 106 (Withdrawn): The electronic component of claim 74, wherein said cross-sectional width of said beam is contoured in said "U" shape.

Claim 107 (Withdrawn): The electronic component of claim 74, wherein said cross-sectional width of said beam is contoured in said shape comprising an extension that forms a rib.

Claim 108 (Previously presented): The microelectronic spring structure of Claim 71, wherein said contour increases said area moment of inertia of said beam.

Claim 109 (Previously presented): The microelectronic spring structure of Claim 71, wherein said contour increases said stiffness of said beam.

Claim 110 (Previously presented): The microelectronic spring structure of Claim 71, wherein said contour increases said spring force of said beam.

Claim 111 (Previously presented): The microelectronic spring structure of Claim 71, wherein said contour is non-rectangular.

Claim 112 (Previously presented): The microelectronic spring structure of Claim 111, wherein said contour increases a spring force of said beam relative to a beam having an equivalent mass per unit length having a rectangular contour.

Claim 113 (Previously presented): The microelectronic spring structure of Claim 71, wherein said base and said beam are integrally formed one with another and comprise a single structure.

Claim 114 (Currently amended): The microelectronic spring structure of Claim 113, wherein said single structure ~~[[is a]]~~ comprises lithographically ~~formed structure~~ deposited material.

Claim 115 (Currently amended): The microelectronic spring structure of Claim 71, wherein said base and said beam compose a single~~[[,]]~~ structure ~~formed by an~~ comprising electroplated ~~deposit~~ material.

Claim 116 (Currently amended): An electronic component comprising:

a terminal disposed on said electronic component and providing signal input and/or output to said electronic component; and

an electrically conductive contact structure having two ends, wherein:

a first of said ends comprises a base secured to said terminal,

a beam portion of said contact structure extends away from said electronic component and terminates in ~~said second end~~ a second of said ends, and

a geometric shape of a cross-sectional width of said beam is asymmetrical with respect to an axis about which a mass distribution of said beam at said cross-sectional width is symmetrically distributed,

wherein said cross-sectional width is perpendicular to a length of said beam from said first end to said second end.

Claims 117 and 118 (Canceled)

Claim 119 (Previously presented): The electronic component of Claim 116, wherein said shape is "V" shaped.

Claim 120 (Withdrawn): The electronic component of Claim 116, wherein said shape is "U" shaped.

Claim 121 (Withdrawn): The electronic component of Claim 116, wherein said shape comprises an extended portion forming a rib.

Claim 122 (Previously presented): The electronic component of Claim 116, wherein said shape comprises an arc.

Claim 123 (Withdrawn): The electronic component of Claim 116, wherein said shape comprises two convex arcs joined one to another.

Claim 124 (Previously presented): The electronic component of Claim 116, wherein said contact structure comprises an integrally formed, single structure.

Claim 125 (Currently amended): The electronic component of Claim 124, wherein said contact structure ~~[[is]]~~ comprises lithographically ~~formed~~ deposited material.

Claim 126 (Previously presented): The electronic component of Claim 116, wherein said contact structure comprises electroplated material.

Claim 127 (Previously presented): The electronic component of Claim 116, wherein said shape increases at least one of an area moment of inertia of said beam, a stiffness of said beam, and a spring force of said beam relative to a beam having an equivalent mass per unit length but lacking said shape.

Claim 128 (Previously presented): The electronic component of Claim 127, wherein said shape increases said area moment of inertia of said beam.

Claim 129 (Previously presented): The electronic component of Claim 127, wherein said shape increases said stiffness of said beam.

Claim 130 (Previously presented): The electronic component of Claim 127, wherein said shape increases said spring force of said beam.

Claim 131 (Previously presented): The electronic component of claim 116, wherein said electronic component comprises a semiconductor die.

Claim 132 (Previously presented): The electronic component of claim 131, wherein said die is one of a plurality of dies of an unsingulated semiconductor wafer.

Claim 133 (New): The microelectronic spring structure of claim 71, wherein said thickness of said beam tapers continuously from said base to said tip.

Claim 134 (New): The microelectronic spring structure of claim 71, wherein said beam comprises a compound curve along said length from said base to said tip.

Claim 135 (New): The microelectronic spring structure of claim 71, wherein continuously along said length of said beam from said base to said tip a cross-sectional width of said beam comprises a contour that increases at least one of an area moment of inertia of said beam, a stiffness of said beam, and a spring force of said beam relative to a beam having an equivalent mass per unit length but lacking said contour.

Claim 136 (New): The microelectronic spring structure of claim 71, wherein said thickness of said beam is generally along a direction in which said beam deflects in response to a force applied to said tip.

Claim 137 (New): The electronic component of claim 74, wherein said thickness of said beam tapers continuously from said base to said tip.

Claim 138 (New): The electronic component of claim 74, wherein said beam comprises a compound curve along said length from said base to said tip.

Claim 139 (New): The electronic component of claim 74, wherein continuously along said length of said beam from said base to said tip a cross-sectional width of said beam comprises one of a "V" shape, a "U" shape, and a shape comprising an extension that forms a rib.

Claim 140 (New): The electronic component of claim 74, wherein said thickness of said beam is generally along a direction in which said beam deflects in response to a force applied to said tip.

Claim 141 (New): The electronic component of claim 116, wherein said second end comprises a contact tip configured to contact another electronic component.

Claim 142 (New): The electronic component of claim 141, wherein:

said beam is configured to deflect from an initial position in response to a force applied to said tip, wherein said beam is in said initial position prior to said force being applied to said tip, and

said geometric shape of a cross-sectional width of said beam is asymmetrical with respect to an axis about which a mass distribution of said beam at said cross-sectional width is symmetrically distributed while said beam is in said initial position.

Claim 143 (New): The electronic component of claim 141, wherein a thickness of said beam is thinner at said tip than at said base.

Claim 144 (New): The electronic component of claim 143, wherein said thickness of said beam tapers continuously from said base to said tip.

Claim 145 (New): The electronic component of claim 141, wherein said thickness of said beam is generally along a direction in which said beam deflects in response to a force applied to said tip.

Claim 146 (New): The electronic component of claim 116, wherein said beam comprises a compound curve along said length from said base to said tip.

Claim 147 (New): The electronic component of claim 116, wherein continuously along said length of said beam from said base to said tip a geometric shape of a cross-sectional width of said beam is asymmetrical with respect to an axis about which a mass distribution of said beam at said cross-sectional width is symmetrically distributed.